



# MARYLAND DEPARTMENT OF THE ENVIRONMENT

Technical and Regulatory Services Administration (TARSA)

Toxics Assessment Division

## Memorandum

**To:** Edwal Stone

**From:** Joseph Beaman

**Through:** Richard Eskin

**Date:** 5/4/2018

**Re:** Maryland Numeric Water Quality Criterion for Water Color

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**Background:** A numeric criterion for a water color quality standard is needed for the protection of water quality for the surface waters in the state of Maryland. This is based primarily on the need for specific use criteria to be developed for the North Branch of the Potomac River.

The color of water contained in a specific waterbody has been the subject of much debate. Often, waters are mistakenly characterized as appearing to be a certain “color” due to the transport or suspension of elevated particulate loads that may be temporary (sediment loads following a storm event) or “permanent” (high concentrations of iron/manganese or high primary productivity due to nutrient enrichment) in nature. The most common cause of color in natural waters is the presence of colloidal materials comprised of complex organic compounds (e.g. humates, humic acid, tannins) resulting from the decomposition of naturally occurring organic matter. The Academic Press Dictionary of Science and Technology defines water as a colorless, odorless, tasteless liquid. The color of liquids having these color properties are commonly measured using ASTM Test Method D1209-00 “Standard Method for Color of Clear Liquids (Platinum Cobalt Scale P/C Scale)”. This procedure is used for the visual measurement of the color of essentially light colored liquids, and is applicable only to materials in which the color-producing bodies present have light-absorption characteristics nearly identical with those of the platinum-cobalt color standards used.

A review of the water quality standards of neighboring EPA Region 3 states (DE, PA, VA, and WV) and Pacific Northwest states (OR, WA) has revealed color standards for water quality based on both narrative and numeric criteria (Attachment 1). While most states gave narrative criteria only, Pennsylvania Code contains both (PA Code 25.93; 93.6 (b) General Water Quality Criteria), and (PA Code 25.93, 93.7 Specific Water Quality Criteria -Table 3). The specific use designation is PWS - Public Water Supply. The numeric criterion is based on the maximum allowable color (75 units P/C scale) for natural (raw) waters that can be processed by conventional treatment technology to achieve a measurement of 15 units, the maximum acceptable color (P/C scale) for potable water.).

The present Maryland State criteria are narrative in nature and are located in COMAR 26.08.01.01B(67) and 26.08.02.02B(2) (c) (Attachment 2).

Given the information available, and considering stakeholder needs in this process, several options are available as we proceed with the establishment of a numeric criterion for water color for the State of Maryland (Attachment 3):

1. Adoption of 75 units (P/C scale) as a “default” criterion for all Designated Uses
2. Adoption of 75 units (P/C scale) for P Designated Use Waters only.
3. Adoption of 75 units (P/C scale) as a guidance number for all Designated Uses, but establish as a criterion for P Designated Use Waters only.
4. Establish a different number for water color criterion based on an independent derivation using all available pertinent data.

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